# Australians and technology

From gadgets to gizmos, smart goods to smart phones, notebooks to Nanos, if it plugs in, turns on, uses Bluetooth or Wi-Fi, chances are Australians will want it.

[According to the Economist Intelligence Unit, Australia](http://www.abs.gov.au/ausstats/abs@.nsf/mf/8146.0)Australia) ranked fourth out of 70 countries for its ‘e‑readiness’. E-readiness is a measure of a country’s information and communications technology (ICT) and the ability of businesses and consumers to use ICT to their advantage. In 2008 Australia ranked first in the category of social and cultural environment, which covers such aspects as level of education, level of internet literacy, entrepreneurship and degree of innovation. (Department of Foreign Affairs and Trade 2008)

By all accounts Australians know what technology is and know how to use it. From e­‑mailing to e‑learning, e-shopping to e-banking, Australians of all ages have embraced technology. They dabble in e‑commerce and travel the world using e-passports.

The Household Electrical and Electronic Survey conducted by the NSW Government (Katos & Hoye 2005) shows that each Australian household owned an average of 22 electronic devices, a total of 92.5 million across the country. The same survey indicates that Australians are amassing electronic devices at a greater rate than they are disposing of them.

This means that the issue of electronic waste in Australian households is a growing one. E‑waste is an unwanted side effect of digital technology.

The latest information from the Australian Bureau of Statistics (ABS; 2007) shows that there are approximately nine million computers, five million printers and two million scanners in use in Australia. Yet Australia is one of the only developed nations in the world that has no legislation regarding the disposal of outdated technology. It is still legal in this country to dispose of e‑waste in landfill. Not only is this a waste of useful resources, it is arguably environmentally unsound and ecologically unsustainable.

On average a computer system is made up of 23% plastic, 32% ferrous metals, 18% non-ferrous metals (lead, cadmium, antimony, beryllium, chromium and mercury), 12% electronic boards (which include gold, palladium, silver, lead and platinum) and 15% glass. A standard-size cathode ray tube (CRT) monitor contains more than 2kg of lead. The toxicity of lead has been well known for centuries. Lead is also a non-renewable resource, with the world supply estimated to be exhausted within 40 years (Angel & Brindley 2009).

Each computer and monitor consumes approximately 1.8 tonnes of raw materials in manufacture. One 17-inch monitor alone requires 240 kg of fossil fuels, 22 kg of chemicals and 15 000 kg of water — about the same amount of resources as it takes to manufacture a medium-sized car. Yet in 2006, there were approximately 1.6 million computers disposed of in landfill across Australia and a further 7.1 million placed into storage. Only 500 000 were recycled. Later estimates put the figures at 70 million computers and peripherals either already in landfill or on their way, with a total of 234 million individual items of e-waste sent to landfill by the end of 2009 (Angel & Brindley 2009). It is estimated that less than 4% of printers, digital cameras, DVD players and phones are recycled, which is well below the estimated 9% recycling rate of televisions and computers.

There are compelling reasons to divert e-waste from landfill:

* Preventing contamination of the environment is perhaps the most commonly nominated reason for legislating against the disposal of e-waste in landfill. Simulated studies of landfill conditions on electronic circuit boards shows that the waste will leach lead into the surrounding environment at a rate that exceeds the values set by state and territory governments (Angel & Brindley 2009).
* Numerous studies have shown the rapid depletion of the earth’s natural resources. Indium, used in flat screen monitors and televisions, could be depleted within five years, according to Cohen (2007). The same study shows that lead could be depleted within 40 years and zinc within 30. These elements are commonly used in the manufacture of televisions and computer systems.
* The reduction of greenhouse gas (GHG) emissions is also a reason to divert e-waste from landfill. Each manufactured device has embodied greenhouse gas emissions. These emissions are created during the extraction and refinement of materials, as well as from the energy created during manufacture. If this device is then sent to landfill, more GHG emissions are created to extract and refine new materials for replacement devices. If e-waste is recycled, then most of this energy is recovered. It is estimated that in 2007—08, 484 000 tonnes of greenhouse gas emissions were lost when 88 000 tonnes of televisions and computers were dumped in landfill (Angel & Brindley 2009).

There are many reasons why Australians have a less than satisfactory approach to e‑waste recycling. E-waste recycling facilities currently available in Australia are concentrated in metropolitan areas. Regional Australia is poorly serviced with regard to permanent e-waste recycling options, having to rely instead on local council e-waste collection days or e-waste disposal through local refuse centres. This can be problematic because not all local councils offer e-waste recycling, even in major cities. An independent survey conducted by CNET Australia in April 2008 showed that, of the 37 councils in Sydney, only eight offered e-waste recycling, with another four offering yearly e-waste cleanup days (Carroll & Pereira 2008).

The lack of government legislation concerning e-waste only reinforces the attitude that recycling is a voluntary option for e-waste disposal.

Arguments against recycling e-waste challenge the more intrinsic values of human nature as opposed to the economic rationalisation of costs alone. Such arguments claim that consumers have been conditioned to believe that the latest technology is a necessary part of our working or social lives, so they upgrade to new versions of technology when their old devices still work. The perception that the latest device is as much a status symbol as a useful and convenient tool persists in modern society. One outcome of this point of view centres on the idea that it is consumers who need to push the manufacturers to not only reduce the number of electrical items in production but also to offer upgrading, or a form of trade-in, of superseded devices instead of recycling, especially in terms of smaller more mobile technologies such as mobile phones.

In 2007 *CIO* magazine published an article written by Elgan offering five reasons why recycling e‑waste is bad for the environment. These reasons are summarised below:

1 Recycling pollutes.

The amount of transport of waste to recycling centres, the amount of power consumed during recycling and the labour-intensive nature of the process are the arguments given to support this claim.

2 Recycling does not cut gadget consumption.

Elgan believes that environmental groups should concentrate on encouraging consumers to demand that manufacturers make fewer devices instead of relying on e-waste recycling alone.

3 Recycling demands virtue and individual sacrifice.

Elgan argues that, human nature being what it is, these sacrifices are likely to be short lived.

4 Recycling does not improve products.

The ‘feel good’ nature of recycling could actually work against the production of high-quality products and feed the ‘throw away’ culture prevalent in modern society.

5 Recycling feeds ‘lazy storage’.

This suggests that time constraints inadvertently lead to the storage of smaller items, with consumers knowing that the recycling of those items is something that can be put off for the future.

There is also the argument that landfill is less harmful to the environment than the transport of waste from regional and rural areas of Australia to the nearest recycling centre. There is also little incentive for companies to set up recycling options, as the value of the recovered material is often less than the cost of collection, transport and processing. The cost of collection and transport from regional Australia has been estimated at $590 per tonne (excluding GST) as opposed to $130 per tonne (excluding GST) in metropolitan areas (PricewaterhouseCoopers 2009).

While not a new phenomenon, the ongoing practice of ‘planned obsolescence and perceived obsolescence’ also plays a part in the amount of e-waste generated. Planned obsolescence can be described as the practice of building a life span into a product and is seen in a range of products from motor cars to light bulbs, to electronic equipment. Perceived obsolescence on the other hand is the need to own the latest trend or fad, usually to stay connected to one’s peer group. The desirability of a product, as well as ‘creeping featurism’, is certainly as much an issue of waste generation as is obsolescence of function.

The argument for and against recycling, whether economic or intrinsic, poses more questions than it does in offering answers and is certainly an area for further study.